SPRING THE TIME FOR ROAD WORK

So Says Department of Agriculture.

GOOD WHEN SOIL IS DAMP.

If Attention to Roads Is Put Off Until the Latter Part of Summer the Surface Becomes Dry and the Toil Expended Is Unsatisfactory.

It is a great mistake to put off working roads until August or September, according to road experts of the United States department of agriculture. The roads should be worked when the soil is damp so as to make the soil bake when it dries out. If the roads are worked when they are dry it takes more power to draw the machine, and besides, dry earth and dust retain moisture and quickly rut after rains. The use of chels, sods, weeds or vegetable matter in building earth roads should be avoided because they also retain moisture.

By using the road machine in the spring while the soil is soft and damp the surface is more easily shaped and soon packs down into a dry, hard crust, which is less liable to become dusty in summer and muddy in winter.

Repairs to roads should be made when needed and not once a year after crops are laid by. Because of its simplicity, efficiency and cheapness, the split log drag or some similar device is destined to come into more and more general use. With the drag properly built and its use well understood, the maintenance of earth and gravel roads becomes a simple and inexpensive matter. Care should be taken to make the log so light that one man can lift it with ease, as a light drag can be drawn by two medium sized horses and responds more readily to various methods of hitching and the shifting position of the operator than a heavier one. The best material for the drag is

THE WIDTH OF THE EARTH ROAD WILL DEPEND ON THE TRAFFIC.

a dry cedar log, though elm, walnut, box elder or soft maple are excellent. Oak, hickory or ash is too heavy. The log should be from seven to ten feet long and from eight to ten inches in diameter. It should be split carefully as near the center as possible and the heaviest and best slab chosen for the front. When the soil is moist, but not sticky, the drag does the best work. As the soil in the field will bake if plowed wet, so the road will bake if the drag is used on it when it is wet. If the roadway is full of holes or badly rutted the drag should be used once when the road is soft and slushy.

The earth road can best be crowned and ditched with a road machine and not with picks and shovels, scoops and plows. One road machine with a suitable power and operator will do the work of many men with picks and shovels and, in addition, will do it better. If the road is composed of fine clay or soil it will sometimes pay to resurface it with top soil from an adjacent field which has sand or gravel mixed with it.

Storm water should be disposed of quickly before it has had time to penetrate deeply into the surface of the road. This can be done by giving the road a crown or slope from the center to the sides. For an earth road which is twenty-four feet wide the center should be not less than six inches nor more than twelve inches higher than the outer edges of the shoulder. The narrow road which is high in the middle will become rutted almost as quickly as one which is flat, for the reason that on a narrow road all the traffic is forced to use only a narrow strip.

The width of the earth road will depend on the traffic. As a rule, twenty-five or thirty feet from ditch to ditch is sufficient if the road is properly crowned. Ordinarily the only ditches needed are those made with the road machine, which are wide and shallow. Deep narrow ditches wash rapidly, especially on steep slopes. The earth road should not be loosened, dug up or plowed up any more than is necessary. It should be gradually raised, not lowered; hardened, not softened.

MERIT SYSTEM AND HIGHWAYS.

Two applications of the merit system to highway work which will be noted with satisfaction by road builders have recently been made.

In Connecticut state employment has been put upon a merit system basis by means of the state civil service law which became effective on Aug. 1, 1913. As applied to the highway department, this law puts all of the officials and employees, with the exception of the state highway commissioner, into the classified service.

In New York state the appointment of six division engineers has been made by competitive examination. A description of the method of conducting these examinations was given by First Deputy Commissioner George A. Ricker at the recent special road meetings of the American Society of Civil Engineers.

It has long been recognized that efficiency in the conduct of highway work could best be obtained by the selection of men with regard only to their fitness and ability, and it has been generally believed that the absolute elimination of political considerations from appointments of this kind was desirable. But while these have been generally accepted as abstract principles, their actual application has not been as frequent as might be desired.—Good Roads.

ROAD REPAIRING A REAL ECONOMY.

Funds Should Be Conserved by Repairs at Necessary Times.

The office of public roads of the department of agriculture is making a strong effort to focus the mind of the country on the fact that maintenance and effective repair are of equal importance with the actual improvement of bad roads. Investment of money in new roads does not become real economy until provision is made for keeping these new roads in condition after they are built. If a new road is built and then allowed to fall into disrepair much of the original investment is simply wasted, says Municipal Engineering.

Europe, generally speaking, is ahead of the United States in the matter of road improvement, but Great Britain is struggling with a problem similar to the one that confronts the people of the United States. In England, Scotland and Wales there are no fewer than 2,140 separate authorities, who between them administer 175,487 miles of roads, or an average of only eighty-two miles apiece. In Scotland, apart from the big cities, there are over 200 burghs, one-half of which have but ten miles of road apiece to maintain. Needless to say such a minute mileage is insufficient to keep the road plant fully occupied all the year around and renders the employment of a skilled engineer impossible for economical reasons.

Officials of the office of public roads when called upon for assistance by the various states are pointing out that road building is an art based on a science and that trained men and experienced men are necessary to secure the best results.

Statisticians have found that, although the average expenditure on the improvement of roads exceeds $1,000,000 a day, a large portion of the money in the United States is wasted because of the failure to build the right type of road to meet the local requirements or the failure to provide for the continued maintenance of the improvement.

The various states and counties within the last six months have taken a greater interest in road improvements than ever before in the history of the United States, and there is now a strong movement to conserve the roads of the country where they are improved. Scientific maintenance will be one of the chief features of the work of the office of public roads throughout the present year.

GOOD ROADS IN ARIZONA.

Many Miles of Highway Improved in the Southwest.

Many miles of country roads have been improved in the southwestern country by the application of caliche, which, if properly handled, gives satisfaction for a country road of moderate cost. Last season three miles of road near Phoenix were improved by the application of caliche and a wearing surface of oiled sand and gravel.

Caliche is a local name for a calcareous, cement-like deposit which occurs in great abundance in many parts of Arizona, particularly in and near the foothills. When pulverized, wet and compacted by traffic or rolling it forms a macadam or concrete-like mass of moderate hardness and fairly high degree of toughness.

The engineer states that the road has a very satisfactory surface, but it remains to be seen whether the sand and oil will last as long as the caliche base.

The cost of the road was about $5,000 per mile. Caliche was hauled from one and three-quarters to four and three-quarter miles and the oil from four and one-half to seven and one-half miles.—Engineering Record.

CONVICTS ON THEIR HONOR

They Do Excellent Work In Road Building.

EXPERIMENTS SUCCESSFUL.

The National Committee on Prison Labor Receives Reports From Various States Indicating That the Honor System Produces Good Results.

The practice of putting convicts on their honor, especially prisoners who are at work constructing or repairing highways, has been started in several states and is meeting with much success, according to reports received by the national committee on prison labor. North Dakota, Oregon, New Jersey, Michigan, Ohio and Colorado are among the states where the honor system has been developed to its highest degree. Under the laws of North Dakota the board of control may employ convicts on the public highways, their expenses to be paid by the respective counties in which they work. The law stipulates that the prisoners perform their duties under the supervision of skilled laborers, who act as guards; but, so far as possible, the law de-

CONVICTS AT WORK ON COLORADO ROADS (IN CIRCLE); ALSO ROAD BUILT BY THEM.

clares, the convicts are to be placed on their honor. Another feature of North Dakota's prison laws is worded as follows:

"Each short time convict worked upon said state roads shall receive a credit upon his time of ten days for each thirty days that he shall faithfully and diligently work upon said state roads, and in case of convicts serving life sentences such privileges shall be given them as in the judgment of the warden is proper, but in case that any convict fails to do faithful and efficient work or attempts to escape he shall forfeit all or as many of said credits as in the judgment of the warden shall be proper."

Of 275 convicts who were worked under the honor system in Ohio only eighteen—less than 7 per cent—attempted to escape, according to the report of Preston E. Thomas, warden of the Ohio state penitentiary. While these men were thus employed there was no barrier except their own honor between them and freedom. Of the eighteen men who broke faith, all but seven were caught and returned to the prison, so that the percentage of those who failed to serve their full sentences was only 2½. This record, says Warden Thomas, compares favorably with trusts in the outside world.

Also in Michigan, where all persons convicted of drunkenness or vagrancy are sentenced to work on the roads instead of to jail, the practice of trusting prisoners has been found successful. Not only that, but, according to W. M. Bryant, good roads commissioner of Michigan, the sentencing of convicts to work on the highways tends to eliminate much petty crime. It was in Colorado, under Warden Thomas J. Tynan, that the honor system was first employed among prisoners at work on the highways, and it is in that state and Oregon that the system has been most extensively developed. Governor West of Oregon, in a statement to the national committee on prison labor concerning the honor system among prisoners at work on the roads, said:

"Our road gangs are made up of from fifteen to twenty-five men, with a free man as foreman, who lives and works with his crew. His word is law in camp, and his report as to conduct of the prisoners carries great weight with the prison officials. It is most essential, therefore, that great care be exercised in the selection of these foremen. We have had unexpected success in the operation of our road gangs. Some have been maintained as far as 300 miles from the prison, and nearly all in the hills and mountains, where every opportunity was given to escape. At first we lost a number of men, due largely to the novelty of the plan and unjust newspaper criticism, which made many of them fear the abandonment of the policy and their return to prison. There has been less newspaper criticism of late, and the public, seeing the merits of the system, is accepting it as a settled policy."

EXPERIMENTAL ROADS.

Over 480,000 square yards of different types of roads for experimental and object lesson purposes were constructed during the fiscal year 1912-13 under the supervision of the office of public roads, United States department of agriculture, according to Bulletin 53 of the department, making a total of over 4,000,000 square yards of road constructed under the supervision of this office since 1905.

The types of roads built were brick, concrete, oil-cement concrete, bituminous concrete, bituminous surfaced concrete, bituminous macadam, surface treatment, macadam, asphalt-slag, oil-asphalt-gravel, oil-gravel, oil-coraline, gravel-macadam, gravel, slag, sand-clay, sand-gumbo, burnt clay, shell and earth. The object lesson and experimental work during the past year was done at a cost to the local communities of $139,841.89. This does not include the salaries and expenses of the department engineers. The road work during the year was done in Arkansas, Florida, Georgia, Kentucky, Maryland, Mississippi, Nebraska, North Carolina, South Dakota, Tennessee, Texas, Virginia, Wisconsin and the District of Columbia.

GOOD ROADS IN WISCONSIN.

The Counties Take Advantage of State Aid.

All the counties of Wisconsin are taking advantage of state aid for the improvement of their roads this year. The increasing popularity of this plan is described by John A. Hazelwood, chairman of the state highway commission, as follows:

"Wisconsin embarked upon a policy of county aid for highway improvement of the principal roads in the counties of the state by an enactment of the legislature in 1907, and under the policy of county aid twenty counties in the state accomplished a great deal of good prior to 1912.

"In 1911 the Wisconsin legislature decided upon the policy of state aid in addition to the county aid provided for in 1907 and made an appropriation of $350,000 annually to carry the undertaking along. During the year 1912 sixty-five counties out of seventy-one asked and received county and state aid. Last year sixty-eight out of the seventy-one have received county and state aid for highway betterment.

"The legislature of 1913, apparently appreciating the success and popularity of the state aid provision over that of the county aid policy, appropriated $1,200,000 annually to carry along the good roads work. In 1911, by a narrow margin of one vote, the state appropriation was made for the new policy, while in 1913 every vote in both houses of the legislature, with the exception of seven, was cast for the $1,200,000 appropriation.

"Since the legislature adjourned the three counties not engaged in good road work prior to this time have voted to come under the provisions of the state aid policy. Consequently in 1914 the entire state is carrying on road improvement under the state aid policy."

THE HORSELESS AGE.

Automobiles and Heavy Auto Trucks Make Road Problem Harder.

The astonishing results of a census taken recently on a secondary thoroughfare leading out of London showed only 3 per cent of horse drawn vehicles. The exact count was fifteen vehicles of the latter class to 500 vehicles propelled otherwise than by horses. Herein lies an explanation of the failure of the public authorities generally throughout the world to maintain roads and streets in good condition.

A similar example of the extraordinary change that has occurred in the use of roads in recent years is that of a furniture manufacturing concern in Easton, Pa., which delivers on its own trucks to New York city instead of using the already constructed steel roads—namely, the railroads. This concern uses the ordinary roads. A considerable tonnage is thus transferred from the steel roads specially constructed to bear it to the country road not constructed for any such weight or friction. It has thus come to pass that the science of engineering, which was called upon to furnish experts to railroad companies, is now also called upon to furnish experts to road building authorities.

Colorado Good Roads Association.

During the recent convention of the Colorado Good Roads association it went on record as favoring greater development of the state highways along the plan mapped out by the state highway commission and as advocating a state levy of one-half mill for road building. There was considerable debate on the relative merits of the half mill levy and a bond issue of $5,000,000. The advocates of the former succeeded in carrying the convention, and it is stated that steps will be taken by the association to initiate at the November election a bill to make funds available for 1915.

Plan Highway Improvement.

Plans for highway improvement in Cedar Falls, Ia., in 1914, as suggested by the Cedar Falls Commercial club, contemplate the construction of a highway, entering the city from the northwest, across a long stretch of river bottom, and the erection of a bridge across the Cedar river.

BEST TIME FOR ROAD DRAGGING

Is Directly After a Rain, Says an Expert.

KEEPING A ROAD SMOOTH.

The Best Way to Drag Is to Begin at the Side Ditch and Go Up One Side of the Highway and Then Down the Other In Slanting Direction.

The best results from road dragging come when the roads are dragged directly after a rain, says an expert in the American Agriculturist. The surface of the road is leveled, the holes and ruts are filled up and the earth is puddled. A crust forms when the top dries out, making the road much more lasting than it would be if dragged at any other time.

To keep a road smooth and crowned the best method is to drag with an ordinary wood road drag, made easily with two halves of a log which has been split. This log should be about six or eight inches in thickness and six to eight feet long. The halves are set three feet apart with the smooth surfaces forward and upright. They are fastened together with braces set in holes bored through the log.

If they are not heavy enough a board can be placed on top, and the driver stands upon it. This will weight it down sufficiently. In some cases it has been found desirable to attach a piece of metal along the lower edge of the forward piece of the drag. This cuts the surface of the ground better and does more efficient work.

The road drag should move forward so that it slants across the road in such a way that a small amount of earth will slide past the smooth face of the log toward the middle of the road, thus forming the crown. In this way the edge of the drag smooths out the ruts and fills up the holes.

The best way to drag is to begin at the side ditch and go up one side of the road and then down on the other.

DRAGGING AT SIDE DITCH OF ROAD.

The next trip the drag should be started a little nearer the middle, and the last trip over the road the drag should work close to the middle itself. Small ridges of earth will be thrown in the horse track and smeared by the round side of the log smoothly over the road. The smearing of the earth by the drag is called puddling, and it tends to make the surface smooth and hard and turn off the water, especially after the sun comes out and dries it thoroughly. The road is always dragged after it has rained and not when it is dry. With a good, strong pair of horses and a well built drag one man can drag about three or four miles of a road a day. This is the best possible way to maintain good earth roads. In every county some farmer along each four miles of road should own a drag and drag the road when it rains, and he would find the road in good condition when he goes to market.

The necessity for dragging the road comes about from the fact that water stays on the road surface, because it cannot drain away into the side ditches. If the road has been properly dragged the water will run off the surface. Then if the ditches are properly taken care of the water will drain away and leave the roadway in splendid condition. The crown of the road should be at least ten inches higher than the outside. The rain as it falls on a properly crowned road will run quickly to the sides and not soak into the surface.

The side ditches for surface water should run parallel to the right of way and should be open at every low point, so that the water can run out of them into neighboring brooks or streams. If the ditches merely collect the water from the road surface and do not carry it away large pools will be formed along the roadside, which will generally soak into the soil beneath the road and make it so soft that the wheels of the wagon will cut through the surface and soon destroy it. Consequently it is absolutely necessary to have thorough drainage if splendid earth roads are to be secured.

In many places underdrainage by means of tile is absolutely necessary for best results. The tile should be laid along the side of the road at least two or three feet beneath the surface of the ground.

Notice of Meeting for Increase of Stock.

Office of Oregon and Forest City Telephone Company, Oregon, Mo., Feb. 18, 1914.

Notice is hereby given that a meeting of the stockholders of the Oregon and Forest City Telephone Company will be held at the office of the company on the west side of Washington street, in the City of Oregon, County of Holt, on the twenty-second (22d) day of April, 1914, at nine o'clock a. m., for the purpose of voting upon the proposition then and there to be submitted to increase the capital stock of the company from ten thousand dollars ($10,000), the present authorized capital, to twenty-thousand dollars ($20,000), and for the purpose of voting upon a separate proposition then and there to be submitted, that of the increase of the number of shares of stock from four hundred at twenty-five dollars ($25) per share to eight hundred at twenty-five dollars ($25) per share.

JOE H. MURRAY, President;
W. S. GIFFORD, Vice-President;
M. R. MARTIN, Secretary,
Stockholders.